
Space Weather Forecast

Issued on Friday, 28 October 2022 at 01:23 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of Minor geomagnetic storms throughout. Slight chance of Minor Radio Blackouts throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity over the past 24 hours has been Low, with four numbered sunspot regions on the visible disc. The most active sunspot region on the disc was AR3133 a small region in the northeast, which showed an increase in spot number size and also area. AR3130 in the southwest also developed in size, early in the period, and has a north-south aligned magnetic field. This can aid in creating instability, but currently the region remains relatively simple in terms of its magnetic structure. The largest region on the visible disc remains AR3131 in the northwest, which is stable with a simple magnetic configuration. The final region AR3132 in the southwest is small, weak, magnetically simple and gradually decaying. A coronal mass ejection (CME) was observed on the Earth-Sun line, and this has been associated with a filament eruption from the far south of the Sun. At the start of the period a CME was observed on the Earth-Sun line, associated with a filament eruption from the far south, however the CME is expected to pass to the south and well below the Earth's orbit. No other Earth-directed CMEs have been observed.

Solar Wind / Geomagnetic Activity: The solar wind started the period at background conditions, with speeds generally below 400km/s, then gradually increased to slightly elevated levels, peaking at 476 km/s at 27/2043 UTC, with the probable weak connection to small coronal hole feature in the western hemisphere. The total magnetic field strength was mostly weak, but did briefly reach moderate levels late afternoon. The north-south component also weak and often negative (Southward pointed). Geomagnetic activity was Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) remained at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be mainly Low with a slight chance (15%) of Moderate class flares. However, new regions may rotate onto the visible disc through the period, increasing the chance of significant flares.

Solar Wind / Geomagnetic Activity: Solar wind enhancements are expected at times throughout the period from two coronal hole features, with a weak enhancement initially in place from CH36/+. A more notable HSS is then expected from CH37/+, later tomorrow (29th) and into day 3 (30th), with slightly elevated or elevated winds persisting until the end of the period (31st). Quiet to Unsettled geomagnetic activity at first, with a chance of isolated Active intervals. Then from late tomorrow (29th) mainly Unsettled to Active activity is expected, with a chance of a Minor geomagnetic storm, especially late tomorrow into day 3 (30th).

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Energetic Particles / Solar Radiation: The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms occurring.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	20	40	40	30
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	15	15	15	15
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	2	2	2	2
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)